

W&T OFFSHORE, INC.  
**NORTHWEST GULF FIELD FACILITY**  
MOBILE COUNTY, AL  
FACILITY No.: 503-0013

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MAJOR SOURCE OPERATING PERMIT  
FOURTH TITLE V RENEWAL  
[DRAFT DATE]

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## Table of Contents

PROCESS DESCRIPTION.....	1
PROCESS No. 1 — GAS EXTRACTION.....	1
EQUIPMENT LIST .....	2
NOTABLE CHANGES .....	2
FACILITY-WIDE EMISSION REQUIREMENTS.....	4
STATE REGULATIONS .....	4
ADEM Admin. Code R. 335-3-4-.01(1)(a) and (b), “Visible Emissions” for Control of Particulate Emissions.....	4
ADEM Admin. Code R. 335-3-5-.03(2) “Petroleum Production”-Control of Sulfur Compounds .....	4
ADEM Admin. Code R. 335-3-16-.03, “Major Source Operating Permits” (MSOP) ....	5
ADEM Admin. Code R. 335-3-16-.10, “Permit Shields” for Major Source Operating Permits .....	5
FEDERAL REGULATIONS .....	5
NEW SOURCE PERFORMANCE STANDARDS (NSPS).....	5
40 CFR 60 Subpart A, “General Provisions” .....	5
40 CFR 60 Subpart OOOO “Standards of Performance for Crude Oil and Natural Gas Production, Transmission and Distribution” [NSPS OOOO].....	5
NATIONAL EMISSION STANDARDS FOR HAZARDOUS AIR POLLUTANTS (NESHAP).....	5
40 CFR 63, Subpart A, “General Provisions” .....	6
40 CFR 63 Subpart HH, “National Emission Standards for Hazardous Air Pollutants from Oil and Natural Gas Production Facilities” [Oil and Gas MACT].....	6
40 CFR 64, “COMPLIANCE ASSURANCE MONITORING (CAM)” .....	6
FACILITY-WIDE EMISSIONS .....	6
FLARE REQUIREMENTS .....	8
STATE REGULATIONS .....	9
ADEM Admin. Code R. 335-3-4-.01(1)(a) and (b), “Visible Emissions” for Control of Particulate Emissions.....	9
ADEM Admin. Code R. 335-3-5-.03 (1), (2) and (3), “Petroleum Production” for Control of Sulfur Compound Emissions.....	9
ADEM Admin. Code R. 335-3-14-.04, “Prevention of Significant Deterioration (PSD) Permitting” .....	10

FEDERAL REGULATIONS ..... 11

NATIONAL EMISSION STANDARDS FOR HAZARDOUS AIR POLLUTANTS (NESHAP)..... 11

    40 CFR 63 Subpart HH, “*National Emission Standards for Hazardous Air Pollutants from Oil and Natural Gas Production Facilities*” [Oil and Gas MACT] ..... 11

40 CFR 64, “COMPLIANCE ASSURANCE MONITORING (CAM)” ..... 12

FLARE EXPECTED EMISSIONS ..... 13

PLATFORM ENGINE REQUIREMENTS ..... 14

STATE REGULATIONS ..... 15

    ADEM Admin. Code R. 335-3-4-.01(1)(a) and (b), “*Visible Emissions*” for Control of Particulate Emissions..... 15

    ADEM Admin. Code R. 335-3-14-.04, .08(a) and (b), and .09(a) and (b), “*Prevention of Significant Deterioration (PSD) Permitting*” ..... 15

FEDERAL REGULATIONS ..... 17

NEW SOURCE PERFORMANCE STANDARDS (NSPS) ..... 17

    40 CFR 60 Subpart A, “*General Provisions*” ..... 17

    40 CFR 60 Subpart GG, “*Standards of Performance for Stationary Gas Turbines*” [NSPS GG]..... 17

    40 CFR 60 Subpart IIII, “*Standards of Performance for Stationary Compression Ignition Internal Combustion Engines*” [NSPS IIII]..... 18

    40 CFR 60 Subpart JJJJ, “*Standards of Performance for Stationary Spark Ignition Internal Combustion Engines*” [NSPS JJJJ]..... 18

    40 CFR 60 Subpart KKKK, “*Standards of Performance for Stationary Combustion Turbines*” [NSPS KKKK]..... 19

    40 CFR 63 Subpart YYYY, “*National Emission Standards for Hazardous Air Pollutants for Stationary Combustion Turbines*” [MACT YYYY] ..... 19

    40 CFR 63 Subpart ZZZZ, “*National Emission Standards for Hazardous Air Pollutants for Stationary Reciprocating Internal Combustion Engines*” [MACT ZZZZ] ..... 19

40 CFR 64, “COMPLIANCE ASSURANCE MONITORING (CAM)” ..... 20

PLATFORM ENGINES EXPECTED EMISSIONS..... 21

RECOMMENDATIONS ..... 20



W&T OFFSHORE, INC.  
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## **STATEMENT OF BASIS**

The proposed fourth Title V Major Source Operating Permit (MSOP) Renewal is issued under the provisions of ADEM Admin. Code . 335-3-16. The above named applicant has requested authorization to perform the work or operate the facility shown on the application and drawings, plans, and other documents attached hereto or on file with the Air Division of Alabama Department of Environmental Management, in accordance with the terms and the conditions of this permit.

W&T Offshore, Inc. acquired the existing MSOP on August 30, 2019 from ExxonMobil with an effective date of July 20, 2015 and an expiration date of July 19, 2020. Per ADEM Rule 335-3-16-.12(2), an application for permit renewal shall be submitted at least six (6) months, but not more that eighteen (18) months, before the date of expiration for the permit. The initial renewal application was submitted in a timely manner to the Department on January 17, 2020. The proposed MSOP will expire on **[DATE TBD]**.

### **PROCESS DESCRIPTION**

There were two related processes for the platform which were previously covered by Major Source Operating Permit No. 503-0013: Gas Extraction and Drilling & Workover Operations. As noted in the notable changes section below, only the Gas Extraction (Process No. 1) process will be covered under Major Source Operating Permit No. 503-0013.

#### **Gas Extraction**

Sour gas is produced and gathered from three well templates located in the Northwest Gulf Field. Well fluids and sour gas are produced at each template and cooled and injected with diesel and dilution water before being pipelined to the production platform. Upon entering the production platform, the sour gas is separated from the entrained well fluids (i.e. condensate, injected CIO fluids, and water) by production separators.

The sour gas exiting the separators is sent to a tri-ethylene glycol (TEG) dehydration unit, which decreases the water content of the gas stream. The exiting dry natural gas stream is pipelined to W&T Offshore's Onshore Treatment Facility (OTF), Facility No. 503-4011. The exiting rich glycol is sent to a glycol reboiler where it is heated to remove the absorbed water and recycled back as lean glycol for reuse. The overhead vapors from the glycol reboiler are recovered by routing to the vapor recovery system.

The liquids leaving the separators are sent to a flash tank and then pipelined to W&T's OTF. Vapors from the flash tank are sent to a flash gas compressor which is controlled by the low pressure flare.

Heat is provided by a 5 MMBtu/hr process oil heater. Electrical power for the production platform and wellhead templates is provided by electrical generators powered by two, 1,650 Bhp, gas-fired, four-stroke lean burn (4SLB), RIC engines. Power for a natural gas compressor is provided by a 76.61 MMBtu/hr turbine. The heater, engines, and turbine are fueled by sweetened natural gas supplied from an onshore treating facility or from nearby wells producing from formations that produce sweet natural gas.

### **Equipment List**

The Northwest Gulf Field Facility (NWG) is currently equipped with the following emissions sources:

- Two (2) 1,650 Bhp, 4SLB, SI RIC, Cooper (White Superior) Engine (B-ZAN-505/6)
- 210 Bhp Black Start Diesel Emergency Generator (B-ZAN-521)
- 76.61 MMBtu/hr Natural Gas Compressor Turbine (B-CZZ-301)
- High Pressure Flare (B-ZZZ-503)
- Low Pressure Flare (B-ZZZ-514)
- Two (2) 400 BHP Emergency Diesel-fired 4SB Lead Compression Fire Pump Engines (BA-PBE-367 and BA-PBE-368)

### **NOTABLE CHANGES**

W&T Offshore, Inc. has made a request to modify its existing Major Source Operating Permit (MSOP). They have requested to remove all drilling rig engines (D001, D002, D003), the drilling rig emergency generator (D004), and one remote template methanol storage tank that is included as an insignificant emission source.

This renewal will address the following changes:

1. Removal of permit requirements for drilling engines and emergency generator from the permit.
  - a. Drilling Rig Engines D001, D002, D003 are 2,305 BHP, Diesel-Fired, 4SRB RICE and 1,100 BHP emergency generator engine.
  - b. W&T Offshore, Inc. proposes to remove these engines from the permit because the engines are no longer operational. The engines have been locked out and tagged out, W&T Offshore, Inc. does not anticipate using the engines in facility operations.
2. Unit BD-ABJ-403 will be removed from the permit. Two (2) identical remote template methanol storage tanks (BC-ABJ-403 and BD-ABJ-403) have been historically included as insignificant emission sources at the NWG Field.

- However, only one (1) remote template methanol storage tank currently exists at the facility.
3. Units BA-PBE-367 and BA-PBE-368 will be added to the permit. These 400 BHB Emergency Diesel-fired 4SB Lead Compression Fire Pump engines are regulated under 40 CFR Part 63, Subpart ZZZZ and will have applicable work practice requirements.

## FACILITY-WIDE EMISSION REQUIREMENTS

DESCRIPTION	POLLUTANT	EMISSION LIMIT	REGULATIONS
Petroleum Production - Facility that handles natural gas containing 0.10 grains of H <sub>2</sub> S/scf	H <sub>2</sub> S	Burn gas	Rule 335-3-5-.03(1)
		20 ppbv offsite concentration	Rule 335-3-5-.03(2)
Visible Emissions - Stationary Sources	Opacity	No more than one 6 min avg. > 20%	Rule 335-3-4-.01(1)(a)
		AND No 6 min avg. > 40%	Rule 335-3-4-.01(1)(b)

The plant's applicability to the state and federal regulations are discussed in the following sections.

### STATE REGULATIONS

#### **ADEM Admin. Code r. 335-3-4-.01(1)(a) and (b), “Visible Emissions” for Control of Particulate Emissions**

##### **Applicability:**

These regulations control particulate emissions by restricting visible emissions from stationary sources. These regulations would be applicable to the facility's flares, engines, and compression turbine. The specific monitoring and recordkeeping requirements shall be discussed in the appropriate sections.

#### **ADEM Admin. Code r. 335-3-5-.03(2) “Petroleum Production”-Control of Sulfur Compounds**

##### **Applicability:**

ADEM Admin. Code r. 335-3-5-.03(2) states that all process streams containing at least 0.10 grains of hydrogen sulfide (H<sub>2</sub>S) per SCF [~162 ppmv] shall be burned such that the offsite H<sub>2</sub>S concentration is 20 ppb or less, as averaged over a 30-minute period. The high and low pressure flares would be subject to this regulation. The specific monitoring and recordkeeping requirements will be discussed in the flare section.

**ADEM Admin. Code r. 335-3-16-.03, “Major Source Operating Permits” (MSOP)**

**Applicability:**

The facility has been deemed a major source of criteria pollutants under this regulation since the nitrogen oxide (NO<sub>x</sub>) carbon monoxide (CO), and sulfur dioxide (SO<sub>2</sub>) emissions from the facility have the potential to exceed the 100 TPY threshold for criteria pollutants. However, the facility would not be a major source of hazardous air pollutants (HAPs) because the HAP emissions are not expected to exceed the 10 TPY threshold for a single HAP or the 25 TPY threshold for a combination of HAPs. The facility would be an area source with respect to HAP emissions.

**ADEM Admin. Code r. 335-3-16-.10, “Permit Shields” for Major Source Operating Permits**

**Applicability:**

A permit shield exists under this operating permit in accordance with ADEM Admin. Code 335-3-16-.10 in that compliance with the conditions of this permit shall be deemed in compliance with any applicable requirements as of the date of permit issuance. The permit shield is based on the accuracy of the information supplied in the application for this permit. Under this shield, it has been determined that requirements listed as non-applicable in the application are not applicable to this source.

**FEDERAL REGULATIONS**

**NEW SOURCE PERFORMANCE STANDARDS (NSPS)**

**40 CFR 60 Subpart A, “General Provisions”**

**Applicability:**

Provided that the facility is subject to one of the applicable subparts found under this part, the facility shall comply with this regulation as specified in that subpart.

**40 CFR 60 Subpart OOOO “Standards of Performance for Crude Oil and Natural Gas Production, Transmission and Distribution” [NSPS OOOO]**

**Applicability:**

This facility is not subject to this subpart because this subpart is only applicable to onshore facilities.

**40 CFR 60 Subpart OOOOa “Standards of Performance for Crude Oil and Natural Gas Facilities for which Construction, Modification or Reconstruction Commenced After September 18, 2015” [NSPS OOOOa]**

**Applicability:**

This facility is not subject to this subpart because this subpart is only applicable to onshore facilities, and all components were constructed before September 18, 2015.

**40 CFR 63, Subpart A, “General Provisions”**

**Applicability:**

Provided that the facility is subject to one of the applicable subparts found under this part, the facility shall comply with this regulation as specified in that subpart.

**40 CFR 63 Subpart HH, “National Emission Standards for Hazardous Air Pollutants from Oil and Natural Gas Production Facilities” [Oil and Gas MACT]**

**Applicability:**

The NWG facility processes natural gas prior to the point of custody transfer, and the facility is defined as an area source of HAPs. NWG is an area source of HAPs since it does not meet the definition of a major source of HAPs as defined in 40 CFR §63.761. In order for this facility to be subject to the applicable area source requirements of this subpart, it is required to have an affected source. An affected source for area sources of HAPs would include each tri-ethylene glycol (TEG) dehydration unit. Since the facility is equipped with a TEG dehydration unit, it is subject to the applicable requirements under this subpart. Applicability with this subpart shall be met by controlling emissions for this unit with the flare and following the standard benzene emission limit. Requirements will be discussed in the flare section.

**40 CFR 64, “COMPLIANCE ASSURANCE MONITORING (CAM)”**

**Applicability:**

This subpart is applicable to an emission source provided the source meets the following criteria: it is subject to an emission limit or standard, it uses a control device to achieve compliance with the emissions limit or standard, and it has pre-controlled emissions from a regulated air pollutants that are equal to or greater than 100 percent of the amount, in tons per year, required for a source to be classified as a major source [40 CFR §64.2(a)]. The flares are the only emission units subject to the requirements of this subpart. Compliance with this subpart is discussed in the individual section for the flares.

**FACILITY-WIDE EMISSIONS**

Facility wide potential emissions were obtained from the Title V renewal application and actual facility wide emissions were obtained from the Air Emission Electronic Reporting System (AEERS) for 2019.

<b>POTENTIAL FACILITY WIDE EMISSIONS (TPY)</b>					
<b><u>PM</u></b>	<b><u>SO<sub>2</sub></u></b>	<b><u>NO<sub>x</sub></u></b>	<b><u>CO</u></b>	<b><u>VOC</u></b>	<b>Total <u>HAPs</u></b>
4.21	245	105.9	145.5	46.86	9.79

<b>ACTUAL FACILITY WIDE EMISSIONS FOR 2019 (TPY)</b>					
<b><u>PM</u></b>	<b><u>SO<sub>2</sub></u></b>	<b><u>NO<sub>x</sub></u></b>	<b><u>CO</u></b>	<b><u>VOC</u></b>	<b>Total <u>HAPs</u></b>
1.19	1.01	21.81	20.73	5.60	3.82

## FLARE REQUIREMENTS

DESCRIPTION	POLLUTANT	EMISSION LIMIT	REGULATIONS
High Pressure Flare & Low Pressure Flare	H <sub>2</sub> S	Burn gas with 0.10 grains/Scf Offsite Concentration less than 20 ppbv	Rule 335-3-5-.03(2)
	SO <sub>2</sub>	≤ 245 TPY	Rule 335-3-14-.04 [Anti-PSD]
	Opacity	No more than one 6 min avg. > 20% AND No 6 min avg. > 40%	Rule 335-3-4-.01(1)(a)  Rule 335-3-4-.01(1)(b)
TEG Dehydration Unit	Benzene	< 0.9 Mg/yr Controlled	40 CFR 63.764(e)(1)(ii)

## STATE REGULATIONS

### **ADEM Admin. Code r. 335-3-4-.01(1)(a) and (b), “Visible Emissions” for Control of Particulate Emissions**

#### **Applicability:**

The high and low pressure flares would be subject to the requirements of this regulation.

#### **Emission Standards:**

ADEM Admin. Code r. 335-3-4-.01(1) (a) states that except for one 6-minute period during any 60-minute periods, stationary emission sources shall not discharge into the atmosphere particulate that results in an opacity greater than 20%, as determined by a 6-minute average.

ADEM Admin. Code r. 335-3-4-.01(1) (b) states that at no time shall a stationary emission source discharge into the atmosphere particulate that results in an opacity greater than 40%, as determined by a six minute average.

#### **Emissions Monitoring:**

To comply with the opacity standards, the facility would be required to conduct a daily visual inspection of the flares for the presence or absence of visible emissions. Provided that at any time visible emissions are observed from the flares in excess of the opacity standards, a visible emission observation shall be conducted. When Method 22 is used to determine the duration of emissions, the method has to be conducted by an individual who is familiar with the procedures. When Method 9 is used to determine opacity, it has to be conducted by an individual who is certified to use this procedure. Visual inspections and visible emissions observations are both required to be conducted during daylight hours.

#### **Compliance and Performance Test Methods and Procedures:**

Method 9 or Method 22 found in 40 CFR Part 60, Appendix A would be used to demonstrate compliance with the opacity standards.

#### **Recordkeeping and Reporting Requirements:**

A record of the daily visual inspections of the flares for the presence or absence of visible emissions and each occurrence when a visible emissions observation was conducted should be recorded and maintained. A deviation should be reported within 48 hours or 2 working days when a visible emissions event occurs.

### **ADEM Admin. Code r. 335-3-5-.03 (1), (2) and (3), “Petroleum Production” for Control of Sulfur Compound Emissions**

#### **Applicability:**

The facility flares would be subject to the requirements of these regulations since the facility handles natural gas that contains more than 0.10 grains of H<sub>2</sub>S per standard cubic foot (SCF).

### **Emissions Standards:**

ADEM Admin. Code r. 335-3-5-.03(2) requires that all process gas streams containing greater than 0.10 grains/Scf of H<sub>2</sub>S shall be burned such that the offsite H<sub>2</sub>S concentration is 20 ppbv or less, as averaged over a 30-minute period. The flares are used to comply with this regulation; therefore, the H<sub>2</sub>S feed rate to the flares is not allowed to exceed 18,500 lb/hr, which is based on air quality modeling of larger sources. The feed rate is used as an indicator to show that compliance with the offsite concentration is being met.

ADEM Admin. Code r. 335-3-5-.03(3) requires that SO<sub>2</sub> emissions from a facility that is designed to dispose of or process natural gas containing more than 0.10 grains/Scf of H<sub>2</sub>S do not exceed the allowable limit based on the available sulfur coming into the facility. Since the available sulfur coming into the facility is not expected to exceed 5 Long tons per day (LTD) for a Category I County, the SO<sub>2</sub> emissions from the facility would be unlimited. However, to avoid a PSD review, the SO<sub>2</sub> emissions cannot exceed 245 TPY.

### **Compliance and Performance Test Methods and Procedures:**

One of the following methods should be used to determine the H<sub>2</sub>S content: Tutwiler procedures found in 40 CFR §60.648, chromatographic analysis procedures found in ASTM E-260, or stain tube procedures found in GPA 2377-86 or those provided by the stain tube manufacturer.

### **Emissions Monitoring:**

A sample must be collected no less than once each month to determine the H<sub>2</sub>S concentration of any gas stream that may be sent to the flare. To determine the H<sub>2</sub>S feed rate to the flare, the inlet feed volume is required to be monitored with a system capable of measuring and recording the flow rate and/or the parameters utilized for flow rate calculations or estimated utilizing material balances, computer simulations, special testing, etc.

Monitoring should be in the form of performing monthly calculations to determine the H<sub>2</sub>S feed rate to the flare and the SO<sub>2</sub> emissions from the flare. The volume of gas flared and the H<sub>2</sub>S concentration of the flare gas should be used to calculate the flare emissions.

### **Recordkeeping and Reporting Requirements:**

The following monthly records should be maintained for the flares: deviations from the permit requirements, duration of each vapor recovery system shutdown, stream molecular weight, stream Btu content, inlet wet gas volume, H<sub>2</sub>S feed rate to the flare, flare hours of operation, stream (MMBtu/Month), stream H<sub>2</sub>S, and H<sub>2</sub>S feed.

### **ADEM Admin. Code r. 335-3-14-.04, “Prevention of Significant Deterioration (PSD) Permitting”**

#### **Applicability:**

An Anti-PSD limit has been placed on both of the flares.

### **Emissions Standards:**

The emissions standards for the flares are listed on page 8 under the Flare Requirements section.

### **Compliance and Performance Test Methods and Procedures:**

One of the following methods should be used to determine the H<sub>2</sub>S content: Tutwiler procedures found in 40 CFR §60.648, chromatographic analysis procedures found in ASTM E-260, or stain tube procedures found in GPA 2377-86 or those provided by the stain tube manufacturer.

### **Emissions Monitoring:**

A sample must be collected no less than once each month to determine the H<sub>2</sub>S concentration of any gas stream that may be sent to the flare. To determine the H<sub>2</sub>S feed rate to the flare, the inlet feed volume is required to be monitored with a system capable of measuring and recording the flow rate and/or the parameters utilized for flow rate calculations or estimated utilizing material balances, computer simulations, special testing, etc.

Monitoring should be in the form of performing monthly calculations to determine the H<sub>2</sub>S feed rate to the flare and the SO<sub>2</sub> emissions from the flare. The volume of gas flared and the H<sub>2</sub>S concentration of the flare gas should be used to calculate the flare emissions.

### **Recordkeeping and Reporting Requirements:**

Monthly records of flare SO<sub>2</sub> emissions calculated in pounds per hour, pounds per month, and tons per year shall be maintained for the flare.

## **FEDERAL REGULATIONS**

NATIONAL EMISSION STANDARDS FOR HAZARDOUS AIR POLLUTANTS (NESHAP)

### **40 CFR 63 Subpart HH, “National Emission Standards for Hazardous Air Pollutants from Oil and Natural Gas Production Facilities” [Oil and Gas MACT]**

#### **Applicability:**

In order for this facility to be subject to the applicable area source requirements of this subpart, it is required to have an affected source. An affected source for area sources of HAPs would include each tri-ethylene glycol (TEG) dehydration unit. Since the facility is equipped with a TEG dehydration unit, it is subject to the applicable requirements under this subpart.

The outlet vapor stream from the glycol reboiler is recycled back to the front of the process as opposed to being vented to the atmosphere through the flare. However, when the vapor recovery system is down, a pressure relief device controls emissions to the atmosphere. This limits the emissions from the TEG unit. Since this is considered a federally enforceable limit, the TEG unit meets an exemption assuming the benzene emissions are less than 0.9 Mg/yr.

The TEG unit would be subject to the standards outlined in §63.764(d). However, per §63.764(e)(1)(ii), “The owner or operator of an area source is exempt from the requirements of paragraph (d) of this section if...The actual average emissions of benzene from the glycol dehydration unit process vent to the atmosphere are less than 0.90 megagram per year, as determined by the procedures specified in §63.772(b)(2) of this subpart.”

W&T has accepted a benzene limit of less than 0.9 Mg/year. This exempts them from most of the reporting requirements under Subpart HH. However, this unit is still subject to some requirements in Subpart HH. The only change in the permit will be the language, stating that the TEG unit is in fact subject to Subpart HH. The benzene limit and recordkeeping requirements will remain the same.

**Emission Standards:**

The TEG unit is subject to a benzene limit of 0.9 Mg/year.

**Compliance and Performance Test Methods and Procedures:**

The actual average benzene emissions (in terms of benzene emissions per year) should be determined using one of the methods listed in §63.772(b)(2).

**Emissions Monitoring:**

Emissions monitoring shall be in the form of maintaining records.

**Recordkeeping and Reporting Requirements:**

The facility must maintain a record of the actual average benzene emissions per year.

**40 CFR 64, “COMPLIANCE ASSURANCE MONITORING (CAM)”**

**Applicability:**

The facility flares are utilized as control devices to burn gas containing greater than 0.10 grains of H<sub>2</sub>S/Scf.

The requirement to burn off gases is considered to be a work practice and not an emission limitation. As defined in the CAM regulation, an emission limitation may be expressed in the form of a work practice, process parameter, or other form of specific design. Thus, CAM is applicable and shall be utilized to insure compliance with the requirement to burn the off gases. The parameter chosen to indicate that off gases are being burned shall be the presence of a flame or spark at the flare tip when off gases are being vented.

**Emission Standards:**

Maintain spark or flame at flare tip when gas could be routed to the flares.

**Compliance and Performance Test Methods and Procedures:**

Unless the flares are equipped with a continuous spark flame igniter or with a continuous

burning pilot light that is monitored with a thermocouple or an equivalent device, daily visual inspections of the flare shall be conducted.

**Emissions Monitoring:**

The visual inspection of the flare (if required) shall be conducted daily during daylight hours to detect the presence or absence of a spark or flame at the flare tip.

**Recordkeeping and Reporting Requirements:**

A record of the date, time, observer, and results of each visual inspection and each visible emissions observation of the flare shall be maintained. A record of the time, date and results of each calibration shall be maintained if a flame igniter or a thermocouple is being used. Each occurrence when a spark or flame is not maintained at the flare tip shall be reported as a deviation. If the accumulated hours of deviation events occurring exceed 5% of the flare’s operating time during any semi-annual reporting period, a Quality Improvement Plan (QIP) shall be developed and implemented.

Periodic monitoring reports (PMR) are required to be submitted to the Department on a semi-annual basis and it is required to include deviations reported during the semi-annual reporting period.

**FLARE EXPECTED EMISSIONS**

The emissions from the flares are based on AP-42 emission factors and flare logs with an applied safety factor of 10.00%.

FLARE POTENTIAL EMISSIONS						
EMISSION SOURCE	(TPY)					
	SO <sub>2</sub>	NO <sub>x</sub>	CO	VOC	TOTAL HAP	CO <sub>2e</sub>
High Pressure Flare	21.69	1.54	7.04	14.99	0.04	2,611
Low Pressure Flare	18.38	0.71	3.23	6.88	0.007	1,199
<b>Total Flare Emissions</b>	<b>40.07</b>	<b>2.25</b>	<b>10.27</b>	<b>21.87</b>	<b>0.047</b>	<b>3,810</b>

## PLATFORM ENGINE REQUIREMENTS

DESCRIPTION	POLLUTANT	EMISSION LIMIT	REGULATIONS
1,650 BHP, Cooper (White Superior), Gas-Fired, 4SLB RICE, Platform Electric Generator (B-ZAN-505)	NO <sub>x</sub>	7.3 lbs/hr	Rule 335-3-14-.04 [Anti-PSD]
	CO	10.9 lbs/hr	Rule 335-3-14-.04 [Anti-PSD]
1,650 BHP, Cooper (White Superior), Gas-Fired, 4SLB RICE, Platform Electric Generator (B-ZAN-506)	NO <sub>x</sub>	7.3 lbs/hr	Rule 335-3-14-.04 [Anti-PSD]
	CO	10.9 lbs/hr	Rule 335-3-14-.04 [Anti-PSD]
210 BHP Black Start Diesel Emergency Generator (B-ZAN-521)		<i>Applicable Work Practices:</i> Change Oil & Filter every 500 hours or annually, whichever comes first  Inspect air cleaner every 1,000 hours of operation or annually, whichever comes first, and replace as necessary	§63.6602, Table 2(d) (No. 4)
Two (2) 400 BHP Emergency Diesel-Fired 4SB RICE Lead Compression Fire Pump Engine (BA-PBE-367 and BA-PBE-368)		Check Belts & Hoses every 500 hours or annually, whichever comes first	§63.6602, Table 2(d) (No. 4)
6,000 BHP, Solar, Gas-Fired, SCCT (B-CZZ-301)	NO <sub>x</sub>	6.81 lbs/hr	Rule 335-3-14-.04(9)(b) [PSD/BACT]
	CO	8.29 lbs/hr	40 CFR 60.332(c) Rule 335-3-14-.04(9)(b) [PSD/BACT]
	SO <sub>2</sub>	150 ppmv or 0.8% by weight Sulfur	40 CFR 60.333(a)  40 CFR 60.333(b)
B-ZAN-505, B-ZAN-506, B-CZZ-301, B-ZAN-521, BA-PBE-367, BA-PBE-368 Units described above	Opacity	No more than one 6 min avg. > 20%	Rule 335-3-4-.01(1)(a)
		AND No 6 min avg. > 40%	Rule 335-3-4-.01(1)(b)

## STATE REGULATIONS

### **ADEM Admin. Code r. 335-3-4-.01(1)(a) and (b), “Visible Emissions” for Control of Particulate Emissions**

#### **Applicability:**

The platform engines would be subject to the requirements of this regulation.

#### **Emissions Standards:**

The engines would be required to comply with the 20%/40% state opacity standards specified in these subparts.

#### **Compliance and Performance Test Methods and Procedures:**

A daily visible inspection is not required. However, if visible emissions are observed, Method 9 or Method 22 found in 40 CFR 60, Appendix A would be used to demonstrate compliance with the opacity standards.

#### **Emissions Monitoring:**

Method 9 or Method 22 found in 40 CFR Part 60, Appendix A would be used to demonstrate compliance with the opacity standards.

#### **Recordkeeping and Reporting Requirements:**

No records are required.

### **ADEM Admin. Code r. 335-3-14-.04, .08(a) and (b), and .09(a) and (b), “Prevention of Significant Deterioration (PSD) Permitting”**

#### **Applicability:**

Anti-PSD limits have been placed on both of the electric generator engines (Rule 335-3-14-.04). PSD/BACT limits have been placed on the compressor turbine (Rule 335-3-14-.09(b)).

#### **Emissions Standards:**

The emissions standards for the engines are listed on page 14 under the Platform Engine Requirements section.

#### **Compliance and Performance Test Methods and Procedures:**

To demonstrate compliance with the emissions standards for the engines, the following requirements must be met:

- Engines B-ZAN-505 and B-ZAN-506 must be tested for NO<sub>x</sub> emissions using EPA 40 CFR 60 Appendix A, Method 7, 7A, 7B, 7C, 7D, or 7E.
- Turbine B-CZZ-301 must be tested for NO<sub>x</sub> emissions using EPA 40 CFR 60 Appendix A, Method 7E, and 40 CFR 60 Appendix A, Method 3 (or Method 3A), OR

40 CFR 60 Appendix A, Method 20, OR ASTM D6522-00 as incorporated in 40 CFR §60.17.

- Engines B-ZAN-505 and B-ZAN-506 must be tested for CO emissions using EPA 40 CFR 60 Appendix A, Method 10, 10A, or 10B.
- Turbine B-CZZ-301 must be tested for CO emissions using EPA 40 CFR 60 Appendix A, Method 10, 10A, or 10B OR Method ASTM D6522-00, as incorporated in §60.17.
- The fuel gas shall be tested for Btu content using Method ASTM D1826-77 OR an equivalent method.
- The fuel gas shall be tested for H<sub>2</sub>S content using the Tutwiler procedures found in 40 CFR §60.648, the chromatographic analysis procedures found in ASTM E-260, the stain tube procedures found in GPA 2377-86, OR those provided by the stain tube manufacture.

### **Emissions Monitoring:**

The fuel gas volume for each of the engines shall be monitored with a system capable of continuously measuring and recording the flow rate and/or the parameters utilized for flow rate calculations.

A performance test shall be conducted on the engines at least once every five (5) years. A periodic test shall be conducted within twelve (12) months of either the lasted performance test or periodic test.

To demonstrate compliance with the emissions standards for all engines, the fuel gas must be tested no less than once each twelve (12) months for its heat content (Btu/Scf) and hydrogen sulfide content (H<sub>2</sub>S ppmv). The fuel gas heat content, emission factors, fuel volume used, and operating hours will be utilized in monthly calculations of pollutant emissions.

### **Recordkeeping and Reporting Requirements:**

The following monthly records should be maintained for the engines: deviations from the permit requirements, maintenance performed on each engine, engine fuel consumption, fuel gas heat content, fuel gas H<sub>2</sub>S content, engine fuel (MMBtu/Month), engine operating hours, and engine emissions.

A Periodic Monitoring Report (PMR) that identifies each incidence of a deviation from a permit term or condition shall be prepared and submitted to the Department semi-annually on a calendar basis. The reports shall be received within 30 days of the end of the reporting period.

## FEDERAL REGULATIONS

### NEW SOURCE PERFORMANCE STANDARDS (NSPS)

#### **40 CFR 60 Subpart A, “General Provisions”**

##### **Applicability:**

Provided that the facility is subject to one of the applicable subparts found under this part, the facility shall comply with this regulation as specified in that subpart.

#### **40 CFR 60 Subpart GG, “Standards of Performance for Stationary Gas Turbines” [NSPS GG]**

##### **Applicability:**

The turbine is subject to the requirements of this subpart because it was constructed after October 3, 1977.

##### **Emissions Standards:**

The turbine is subject to NO<sub>x</sub> and sulfur (elemental and SO<sub>2</sub>) limits set by NSPS GG. The sulfur dioxide and sulfur limits are listed on page 14 under the Platform Engine Requirements section. SO<sub>2</sub> emissions limits will be met by combusting only sweetened natural gas in the turbines.

Per §60.332(c), the NSPS GG NO<sub>x</sub> limit must be calculated utilizing the equation in §60.332(a)(2). However, the PSD/BACT limit listed on page 14 is more stringent than the limit given by this equation. Per §60.10(a) of the NSPS General Provisions:

“The provisions of this part shall not be construed in any manner to preclude any State or political subdivision thereof from: (a) Adopting and enforcing any emission standard or limitation applicable to an affected facility, provided that such emission standard or limitation is not less stringent than the standard applicable to such facility.”

Therefore, the facility may be required to comply with a more stringent limit than given by the NSPS. Additionally, per §60.334(e), an owner or operator of a new turbine that commences construction after July 8, 2004, and does not use water or steam injection, is not required to monitor operations with a continuous monitor, but may continue to utilize a NO<sub>x</sub> monitoring plan that was approved by the state. Since this unit was constructed after July 8, 2004 and relies on Dry Low-NO<sub>x</sub> Combustion, W&T Offshore, Inc. is not required to install a continuous monitor and may continue to comply with a state-approved plan.

##### **Compliance and Performance Test Methods and Procedures:**

To demonstrate compliance with the emissions standards for the turbine, the following requirements must be met:

- Turbine B-CZZ-301 must be tested for NO<sub>x</sub> emissions using EPA 40 CFR 60

Appendix A, Method 7E, and 40 CFR 60 Appendix A, Method 3 (or Method 3A), OR 40 CFR 60 Appendix A Method 20, OR ASTM D6522-00 as incorporated in 40 CFR §60.17.

**Emissions Monitoring:**

The fuel gas volume for the turbine shall be monitored with a system capable of continuously measuring and recording the flow rate and/or the parameters utilized for flow rate calculations.

The fuel gas must be tested no less than once each twelve (12) months for its heat content (Btu/Scf) and hydrogen sulfide content (H<sub>2</sub>S ppmv). The fuel gas heat content, emission factors, fuel volume used, and operating hours will be utilized in monthly calculations of pollutant emissions.

**Recordkeeping and Reporting Requirements:**

The following monthly records should be maintained for the turbine: deviations from the permit requirements, maintenance performed on each engine, engine fuel consumption, fuel gas heat content, fuel gas H<sub>2</sub>S content, engine fuel (MMBtu/Month), engine operating hours, and engine emissions.

A Periodic Monitoring Report (PMR) that identifies each incidence of a deviation from a permit term or condition shall be prepared and submitted to the Department semi-annually on a calendar basis. The reports shall be received within 30 days of the end of the reporting period.

**40 CFR 60 Subpart IIII, “Standards of Performance for Stationary Compression Ignition Internal Combustion Engines” [NSPS IIII]**

**Applicability:**

NSPS IIII applies to stationary compression ignition (CI) internal combustion engines (ICE). Engines B-ZAN-505 and B-ZAN-506 are spark ignition ICEs, so this subpart would not apply to them. B-ZAN-521 is an ICE that was constructed before July 11, 2005, so this subpart would not apply. BA-PBE-367 and BA-PBE-368 are fire pump engines that were constructed before July 1, 2006, so this subpart would not apply.

Per §60.4219, a stationary ICE is defined as any ICE except combustion turbines. Therefore, Unit B-CZZ-301 would not be subject to this subpart.

**40 CFR 60 Subpart JJJJ, “Standards of Performance for Stationary Spark Ignition Internal Combustion Engines” [NSPS JJJJ]**

**Applicability:**

NSPS JJJJ applies to stationary spark ignition (SI) internal combustion engines (ICE) constructed, modified, or reconstructed after June 12, 2006. All engines present at this facility were constructed before June 12, 2006 and have not been modified or reconstructed.

Therefore, the engines would not be subject to this subpart.

**40 CFR 60 Subpart KKKK, “Standards of Performance for Stationary Combustion Turbines” [NSPS KKKK]**

**Applicability:**

NSPS KKKK applies to turbines constructed, reconstructed, or modified after February 18, 2005 [§60.4300]. Unit B-CZZ-301 was constructed before February 18, 2005. Therefore, the turbine is not subject to this subpart.

**40 CFR 63 Subpart A, “General Provisions”**

**Applicability:**

Provided that the facility is subject to one of the applicable subparts found under this part, the facility shall comply with this regulation as specified in that subpart.

**40 CFR 63 Subpart YYYY, “National Emission Standards for Hazardous Air Pollutants for Stationary Combustion Turbines” [MACT YYYY]**

**Applicability:**

This regulation applies to turbines located at major sources of HAPs. Since this facility is not a major source of HAPs, this regulation does not apply.

**40 CFR 63 Subpart ZZZZ, “National Emission Standards for Hazardous Air Pollutants for Stationary Reciprocating Internal Combustion Engines” [MACT ZZZZ]**

**Applicability:**

Units B-ZAN-505, B-ZAN-506, B-ZAN-521, BA-PBE-367, and BA-PBE-368 would be subject to this subpart because they are existing stationary RICE located at an area source of HAPs. Per §63.6590(1)(iii), “For stationary RICE located at an area source of HAP emissions, a stationary RICE is existing if you commenced construction or reconstruction of the stationary RICE before June 12, 2006.” These five engines would be subject to this subpart because each engine was constructed before June 12, 2006.

However, Engine Nos. B-ZAN-505 and B-ZAN-506 may be defined as ‘remote stationary RICE’ under §63.6675 because they are located more than a mile from the shoreline. Per §63.6603(f), “Owners and operators...must evaluate the status of their stationary RICE every 12 months. Owners and operators must keep records of the initial and annual evaluation of the status of the engine. If the evaluation indicates that the stationary RICE no longer meets the definition of remote stationary RICE in §63.6675 of this subpart, the owner or operator must comply with all of the requirements for existing non-emergency SI 4SLB and 4SRB stationary RICE with a site rating of more than 500 HP located at area sources of HAP that

are not remote stationary RICE within 1 year of the evaluation.”

The remote status of B-ZAN-521, BA-PBE-367, and BA-PBE-368 have no bearing on the regulatory applicability of this unit because only engines with a max horsepower greater than 500 BHP have their requirements determined by remote or non-remote status.

**Emissions Standards:**

Engine Nos. B-ZAN-505, B-ZAN-506, B-ZAN-521, BA-PBE-367, and BA-PBE-368 are subject to the work practice standards in Table 2d of Subpart ZZZZ.

**Compliance and Performance Test Methods and Procedures:**

Engine Nos. B-ZAN-521, BA-PBE-367, and BA-PBE-368 are subject to the work and management practice requirements in Table 6 of Subpart ZZZZ. The engines must be operated as outlined in 40 CFR §63.6640(f).

**Emissions Monitoring:**

Per 40 CFR §63.6625(f), a non-resettable hour meter must be installed on Engine Nos. B-ZAN-521, BA-PBE-367, and BA-PBE-368 if one is not already installed.

**Recordkeeping and Reporting Requirements:**

A record of the initial and annual evaluation of the remote status of Engine Nos. B-ZAN-505 and B-ZAN-506 must be maintained.

The following records must be maintained for Engine Nos. B-ZAN-521, BA-PBE-367, and BA-PBE-368: maintenance conducted on the engine, hours of operation that is recorded through the non-resettable hour meter, maintenance plan, occurrence and duration of each malfunction of operation, and actions taken during periods of malfunction.

**40 CFR 64, “COMPLIANCE ASSURANCE MONITORING (CAM)”**

**Applicability:**

Engines B-ZAN-505 and B-ZAN-506 have the potential to emit greater than the 100 TPY limit for NOx and CO. The facility is regulated by NOx and CO limits on these engines, but the facility does not use a control device to meet these limits. Therefore, these engines would not be subject to CAM.

**PLATFORM ENGINES EXPECTED EMISSIONS**

These potential emissions are based on AP-42 emission factors and maximum heat input values.

PLATFORM ENGINES EMISSIONS						
Emission Source	(TPY)					
	SO <sub>2</sub>	NO <sub>x</sub>	CO	VOC	TOTAL HAP	CO <sub>2e</sub>
B-ZAN-505	4.19	31.97	47.74	6.16	3.77	5,753
B-ZAN-506	4.19	31.97	47.74	6.16	3.77	5,753
B-ZAN-521	0.11	1.63	0.35	0.16	0.001	29.38
B-CZZ-301	2.52	29.81	36.3	0.70	0.92	37,283
BA-PBE-367	0.02	3.09	0.67	0.25	0.002	114.5
BA-PBE-368	0.02	3.09	0.67	0.25	0.002	114.5
<b>Total Engine Emissions</b>	<b>11.05</b>	<b>101.56</b>	<b>133.47</b>	<b>13.68</b>	<b>8.464</b>	<b>49,047.38</b>

**RECOMMENDATIONS**

I recommend that W&T Offshore, Inc. be issued a renewal for the Northwest Gulf Field Facility's MSOP No. 503-0013. My recommendation is based on the fact that the facility should be able to comply with all federal and state requirements specified in its permit.

\_\_\_\_\_  
 Hunter Williams  
 Air Division  
 Energy Branch  
 Industrial Minerals Section

DRAFT  
 Date